

REMARKS

Claims 1-12 and 15-38 are pending in this application. Claims 1-12 and 15-38 are rejected. No new matter has been added. It is respectfully submitted that the pending claims define allowable subject matter.

Claims 1 and 16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield et al. (U.S. Patent 5,779,641), hereafter Hatfield, in view of Hossack et al. (U.S. Patent 6,116,244), hereafter Hossack and Burr (U.S. Patent 6,169,549). Claims 25 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack and further in view of Schoolman (U.S. Patent 5,488,952). Claims 2-8 and 17-21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack and Burr and further in view of Baldwin et al. (U.S. Patent 4,827,413), hereafter Baldwin. Claims 27-30 and 32-34 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack and Schoolman and further in view of Baldwin. Claims 30-32 have been rejected under the same rationale as claims 6 and 25. Claims 9, 10, 22 and 23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack, Burr and Baldwin and further in view of Drebin et al. (U.S. Patent 4,835,712), hereafter Drebin. Claim 35 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack, Schoolman and Baldwin and further in view of Drebin. Claims 11, 12, 15 and 24 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack, Burr and Baldwin and further in view of Vining (U.S. Patent 6,083,162). Claims 36-38 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack, Schoolman and Baldwin and further in view of Vining. Claim 26 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hatfield in view of Hossack and Schoolman and further in view of Ramanujam (U.S. Patent 5,570,460). Applicant respectfully traverses these rejections for at least the reasons set forth below.

Claim 1 recites graphics processing circuitry for a medical ultrasound system comprising, among other elements “a vertex data block storing vertex entries that define rendering shapes, the rendering shapes including a series of triangles that form a triangle strip and that share at least one common vertex.” The Office Action states that the Hatfield and Hossack references

teach every recitation in claim 1 except for a series of triangles that form a triangle strip and that share at least one common vertex. The Office Action then states that Burr “teaches wherein the rendering shapes include a series of triangles that form a triangle strip and that share at least one common vertex...” and that “the triangle fans (cycles) are understood to be triangle strips that share at least one common vertex...” (Office Action, pages 3-4). Applicant respectfully disagrees.

Burr describes a mesh that includes a triangle cycle or fan 102, a cycle vertex 104 and cycle-boundary vertices 106 (column 4, lines 31-32). However, Burr makes clear that the methods described therein enable “rendering of continuous LODs using a triangle-cycle or triangle-fan covering” and that the methods “are of higher quality than *the triangle strips* used in conventional techniques.” (column 3, lines 17-22, emphasis added). Accordingly, Applicant submits that the Burr reference explicitly distinguishes the methods described therein from methods that use triangle strips as specifically recited in claim 1, thereby also teaching away from using triangle strips. Thus, Applicant submits that claim 1 is allowable over the cited prior art.

Claim 16 recites a medical ultrasound imaging system wherein “the signal processor stores image data entries for at least one ultrasound beam in a data block in the graphics memory, stores vertex entries that define blending shapes in a vertex data block in the graphics memory, and initiates rendering of the volume according to a plurality of rendering planes defined by one of a plurality of sets of rendering geometries, each of the sets of rendering geometries defining at least one different rendering plane for one of a different depth and curved surface.” The Office Action states that the Hatfield and Hossack every recitation of claim 16 except for “each of the sets of rendering geometries defining at least one different rendering plane for one of a different depth and curved surface.” The Office Action then asserts that in Burr “each of the triangle fans/cycles define different rendering planes at a different level of detail based on the distance from the user thus indicating that the different triangle cycles/fans are defined for different rendering planes based on depth...” (Office Action, page 5). Applicant respectfully disagrees.

Applicant submits that the level of detail in Burr is not the same as “each of the sets of rendering geometries defining at least one different rendering plane for one of a different depth

and curved surface” as recited in claim 16. The methods of Burr provide a multiresolution generation process using a progressive mesh to avoid mesh discontinuities. A level of detail is not the same as a level of depth. The methods of Burr are concerned with vertex-level granularity and not any type of depth based rendering model. Burr attempts to maintain a continuous level of detail using different sized triangles, which is unrelated to having different rendering geometries defining at least one different rendering plane for one of a different depth and curved surface as recited in claim 16. Rendering geometries are not changed based on depth, but instead, interim meshes are changed to maximize some quality criterion such as error to an original mesh (see, e.g., Burr, column 11, lines 39-50). There are no different definitions based on depth. Accordingly Applicant submits that claim 16 is allowable over the cited prior art.

Claim 25 recites a method for rendering a volume in a medical ultrasound imaging system comprising, among other elements “initiating volume rendering of the dataset by a graphics processing unit by blending the rendering planes to form a first volume rendering from a first viewing direction and a second volume rendering from a second viewing direction, the first and second viewing directions defining a stereoscopic volume rendering.” The Office Action states that the specification as filed describes that “the second direction is slightly different from the first thus indicating that the first direction and the second direction are left and right eye directions...” (Office Action, page 19). The specification as filed at paragraph 0064 describes viewing directions specified by different stereoscopic viewpoint definitions 1020 and 1022. Schoolman only describes selecting “required data to display the structures represented by the image data from a selected viewpoint or perspective.” (column 5, lines 33-35). Thus, the system of Schoolman specifies only a single viewpoint and not different viewpoint definitions as recited in claim 25. Accordingly Applicant submits that claim 25 is allowable over the cited prior art.

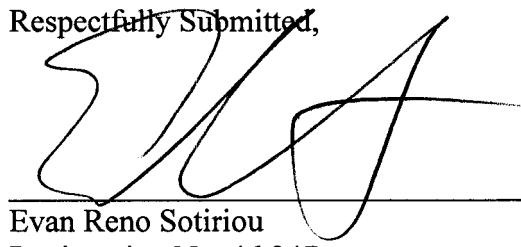
The additional prior art relied on in connection with Hatfield, Hossack, Burr and Schoolman to reject the dependent claims does not make up for the deficiencies in these references. Accordingly, dependent claims 2-12, 15, 17-24 and 26-38 are likewise patentable over the cited art based at least on the dependency of these claims from an independent claim, each of which is submitted to be allowable over the prior art. Moreover, each of dependent

claims 2-12, 15, 17-24 and 26-38 further recite subject matter not anticipated or rendered obvious by the cited prior art.

In view of the foregoing remarks, it is respectfully submitted that the prior art neither anticipates nor renders obvious the claimed invention and the pending claims in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the telephone number listed below.

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Respectfully Submitted,



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